

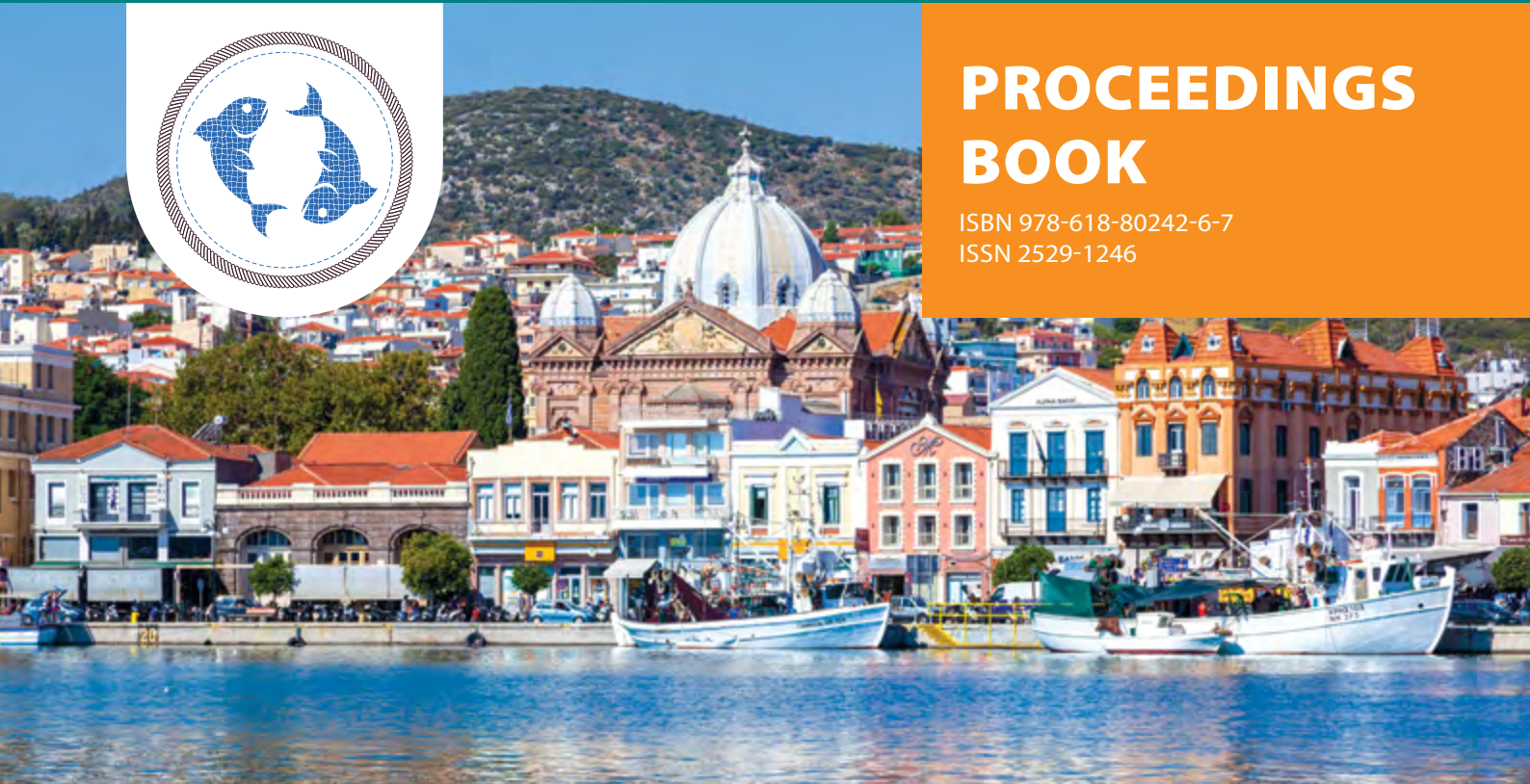
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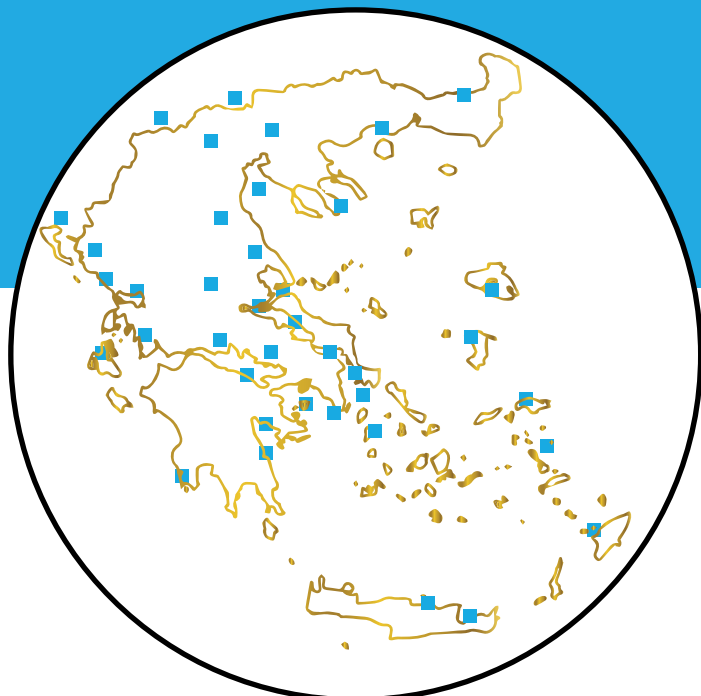
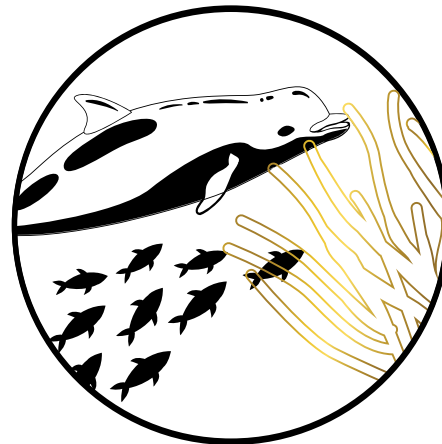
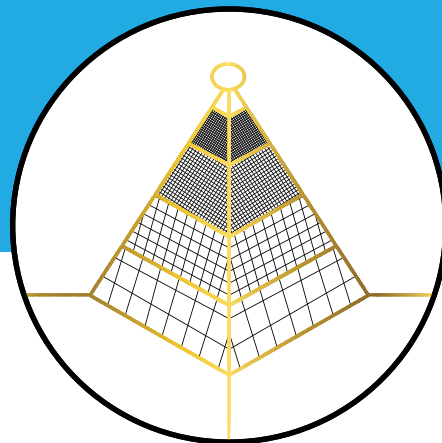
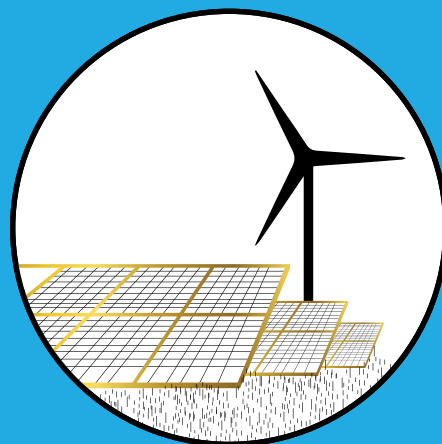
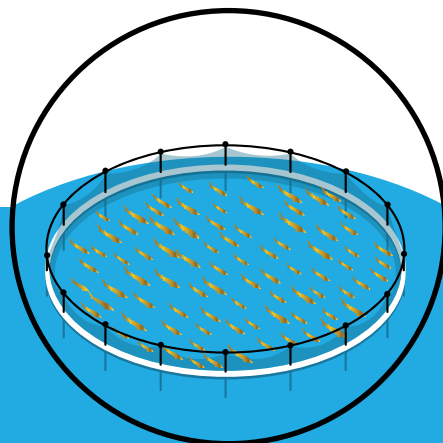
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WELCOME ADDRESS



Dear colleagues and friends,

We are excited to welcome you at the 5th International Congress on Applied Ichthyology, Oceanography, and Aquatic Environment (**HydroMediT 2024**) in Mytilene, at the hospitable island of Lesvos, from the 30th of May to the 2nd of June 2024, in the premises of the University of the Aegean, with a series of National and International stakeholders as Co-Organizers, Supporters and Sponsors.

During the five years of absence of an in-person congress, we have managed to organize in 2021 a very successful online event. Nevertheless, we consider that the personal contact cannot be substituted and we decided to organize our forthcoming congress as an event with physical presence, allowing for a limited number of young researchers and students to present their work remotely.

Our initial ambition, when we joined our forces before 10 years by merging our previous congresses, was to establish a forum that will promote sound technological solutions – based on the edge of the scientific knowledge – to smooth the existing problems for aquaculture and fisheries, and to promote the efforts for the protection and the preservation of the fragile Mediterranean environment.

Today **HydroMediT** has been established as one of the major International Congresses on novel scientific and technological trends and aspects on Applied Ichthyology, Oceanography, and Aquatic Environment in our region, covering the Mediterranean and its adjacent Seas, with an increasing representation of the academic community, and we want to thank you all for your continuous support.

Being the Chairman of this Congress it is my honour and pleasure to welcome you to **HydroMediT 2024** on behalf of the four organizers:

- Department of Ichthyology and Aquatic Environment (DIAE), University of Thessaly
- Department of Fisheries and Aquaculture (DFA), University of Patras
- Department of Marine Sciences (DMS), University of the Aegean
- Panhellenic Society of Technologists Ichthyologists (PASTI)

The main theme of **HydroMediT 2024** is “Integrating Research and Scientific Collaboration to Foster Sustainability of the Blue Economy”, on our effort to highlight the need for Policy Makers, Industry players, and Scientists to work together and deal with the different challenges of Blue Economy.

During the four days of our congress a broad range of topics will be covered in its scientific sessions, in the form of oral presentations and e-poster sessions, having also a keynote speech and invited lectures on different topics from renowned researchers across Europe.

We have faith that our **HydroMediT 2024** congress will bring together in its parallel sessions different experiences from our region and its adjacent seas, while offering many networking opportunities, and we strongly encourage the authors to present their work in it.

We welcome your participation and encourage you to register as soon as possible via the main Congress website. Alternatively, you may wish to support our effort as an Exhibitor or Sponsor and we invite you to view our sponsorship prospectus.

For the Organizing Committee of the Congress

Dr. Michael Chatziefstathiou
Chairman of the Congress

GENERAL INFORMATION

HydroMediT 2024 will focus on our effort to highlight the need for Policy Makers, Industry players, and Scientists to work together and deal with the different challenges of Blue Economy.

Main topic of the Congress will be:

Integrating Research and Scientific Collaboration to Foster Sustainability of the Blue Economy

The official language of the congress is English.

Papers have been peer reviewed by maximum two (2) reviewers and only those accepted by the Scientific Committee will be presented. The oral presentations must be less than **15 minutes**.

The **ePosters** will not be presented by their authors. Large screens will be installed in the Congress Venue, in order to screen the e-posters on a rotating basis. At the same time, laptops will be available, where delegates will be able to access any e-poster of their choice

Scientific Committee reserves the right to re-assign submission to a different type of presentation (from oral to poster, and vice - versa).

Proceedings will be available to delegates in digital or web-based format.

Venue: University of the Aegean

Mytilene, 811 00

For more information:

www.hydromedit.gr

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AWARDS

AWARDING CEREMONY OF ACADEMIC & PROFESSIONAL EXCELLENCE



Professor Emeritus MICHAEL KARYDIS

MICHAEL KARYDIS studied Natural Sciences in the University of Athens (B.Sc. 1973). He has been a Ph.D. student in the Hydrobiology Laboratory of the Nuclear Research Center "Democritus" specializing in the use of tracing techniques, focusing at the problem of eutrophication. His studies continued in the Department of Marine Science of the University College of North Wales, U.K. where he was awarded his Ph.D. Degree (1978). He has worked as a research fellow in the NRC Democritus during 1980-1982. His academic carrier was continued in the Hydrobiological Station in Rhodes, as Director (1983-1986). Being one of the founding members of the University of the Aegean, he was appointed Professor in the Department of Environmental Studies. In 1998 M. Karydis was commissioned by the Senate of the University to organize the Department of Marine Sciences, being the head of the Dept. (from its beginning in 1999) for a decade. He retired in 2017, being since then Professor Emeritus. His research interests apart from marine eutrophication include phytoplankton ecology and physiology, aquatic toxicology, coastal management and over the last ten years Marine Spatial Planning. In addition to his work published in international journals, M. Karydis has written books relevant to the marine environment. He has also been a member of the National Council of Research and Technology. Within the framework of ERASMUS he has lectured in European Universities, in UK, Germany, Poland and Finland. He spends his leisure sailing, painting and hiking.



Ioanna Argyrou, Biologist/Ichthyologist, BSc, MSc

BSc in Biology, Aristotle University of Thessaloniki, Greece

MSc “Environment and Development”, National Technical University of Athens (NTUA), Greece

Consultant of Operational Development

Founder and CEO of the NAYS Company

IOANNA ARGYROU, Biologist / Ichthyologist, BSc Aristotle Univ. of Thessaloniki, MSc in “Environment and Development”, National Technical University of Athens (NTUA).

She is consultant and Technical Advisor in Fisheries, Aquaculture, Environment and

Renewable Energy Sources (RES). She has over 30 years of experience in conducting and implementing studies, management and evaluation of investments. She has participated as a special scientist in many EU and National research projects. She has many scientific publications and presentations in national and international conferences. She is member of the Independent Experts Database for European Research & Innovation. She is co-founder of the “Hellenic Technology Platform for Aquaculture”; and participant & administrator of the patent entitled “ICHTHIOKITIDA”, aiming at the protection and growth of the fish population.

She has been the Founder & CEO of NAYS Company for the last 26 years. NAYS specializes in Studies and Consulting Services in the fields of Sustainable Fisheries & Aquaculture, Environmental & Social Monitoring, Climate Change, Environmental Policy and Strategic Environmental Impact Assessment (SEIA). NAYS engages in Marine Spatial Planning & Blue Growth, Circular Economy, Green Development, while it has also been providing relevant services in Alternative Tourism, Marketing, Standardization and Processing of agricultural products.



Professional Small-Scale Fisheries Association “MAKAR” and its president PANAYIOTIS NANIDIS

PANAYIOTIS NANIDIS aged 68 yrs, has been born and lives in the traditional fish village Skala Kallonis in the Kalloni gulf of the island of Lesvos. He has been a professional artisanal fisherman from 1965, working mostly in the Kalloni gulf. He has been the President of the local Fishermen Association during the decade 1990-2000. During the period 2013-2019 he has been the President of the Small-Scale Fisheries Association of the island of Lesvos. From 2019 today he has been the President of the Small-Scale Fisheries Association ‘MAKAR’ of the Kalloni gulf. He is actively supporting

all the years of his professional life the rational management of the marine biological resources (fishes, invertebrates) in the Kalloni gulf and in general of the island of Lesvos, and many times in his public speech he talks about the need for protection of the marine biota of his beloved Kalloni gulf.



FIELDS OF INTEREST

General fields of interest include - but not limited to - the following:

Field 1st: Aquaculture

New Species, Farming Methods and Techniques
Nutrition and Welfare
Physiology of aquatic organism
Reproduction of aquatic organism
"Omics" technologies
Diseases of Aquatic Animals
Sustainable and Organic Aquaculture

Field 2nd: Fisheries

Fisheries Policy and Sustainable Management
Innovative Fisheries Technology
Marine Fisheries Resources
Species Biology and Ecology

Field 3rd: Oceanography

Physics and Climate of the Ocean
Marine Biogeochemistry
Marine Geosciences
Marine Microbiology and Biotechnology

Field 4th: Marine Diversity and Conservation

Ecology, Biogeography and Diversity
Invasive Species Biology
Evolutionary Ecology and Genetics of Marine Organisms
Marine Conservation Planning

Field 5th: Inland Aquatic Ecology and Resources

Ecology and Hydrology
Limnology
Wetlands and Aquatic Systems Management
Modelling and Monitoring of Aquatic Ecosystems

Field 6th: Processing of Aquatic Products

Processing of Products and Quality
Product Control & Microorganisms Risk Assessment
Hygiene of Products and Consumer's Safety
Product Authentication and Certification

Field 7th: Economics And Marketing of Fisheries and Aquatic Products

Fisheries Socio-Economics
Fisheries and Aquatic Products Marketing
Competitiveness of Fisheries Products
Financial Sustainability of Sector Enterprises

Field 8th: Environmental Management and Ocean Literacy

Integrated Coastal Zone Management
Sustainable Water Resources Management
Monitoring Ecosystem Health
Environmental Management Systems
Ocean Literacy - Education for the Marine Environment
Citizen Science

Field 9th: Blue Economy and Governance

Marine Policy and Governance
Innovative Biotechnological Applications and Products
Marine Protected Areas and Blue Governance
Ecotourism (fishing tourism, diving tourism, bird watching, etc)

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ANALYSIS OF ALLOMETRY AND CONDITION FACTOR OF THE WHITE BREAM (*Blicca bjoerkna*) IN THE DANUBE RIVER NEAR BELGRADE (1168-1170 RKM)

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Abstract

This study was conducted on individuals of White bream from commercial catches carried out between December 2014 and May 2015 at two locations in the Danube near Belgrade, Veliko ratno ostrvo (VRO) – the main canal of the Danube, with fast water flow and Jojkića Dunavac (JD) – an armlet of the Danube, with slow water flow. A total of 377 individuals were analysed. Total body length (L, cm) and body weight (W, g) of each sampled individual were measured, and Fulton's condition factor was calculated. Average TL of the fish individuals from the VRO and JD were 23.8 ± 2.4 and 23.1 ± 1.7 , respectively, and average W were 201.0 ± 73.0 and 164.4 ± 42.2 , respectively. In general, fish from location VRO were in better condition ($K = 1.44 \pm 0.16$) compared to sample from JD ($K = 1.31 \pm 0.11$). Individuals in the sample from VRO had a positive allometric growth ($a = -2.22$, $b = 3.28$, $r^2 = 0.89$), while those from JD had a negative allometric growth ($a = -1.79$, $b = 2.93$, $r^2 = 0.85$). Based on the results of this study, positive allometric growth ($b > 3$) and fish condition indicated that individuals from VRO increased body mass more than body length. The source of food, its availability, and better habitat conditions at VRO could be the reason for the differences in the growth and condition of the fish from the investigated locations. The presented results can be applied in fisheries management plans and sustainable exploitation of this fish species as it provides information on stock condition.

Keywords: *Length-weight relationship, allometric growth, Fulton's condition factor, freshwater fish, Serbia*

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1. Introduction

Fisheries management and science use quantitative information on the length-weight relationship (LWR) of individuals of certain fish population in order to assess the stock condition (Froese 2006). A numerous factors can affect LWR of fish: general health and condition of individuals, growth phase, degree of stomach fullness, sex, gonad maturity, size range, season, and preservation techniques (Bagenal & Tesch 1978; Jisr *et al.* 2018). LWR is used for estimation of the weight corresponding to a given length, while condition factor (K) is used for comparison of fish condition (Froese 2006). The general assumption is that lighter fish of a given length are in worse condition. LWR and condition parameters allow researchers to compare populations of certain species between regions or over time (Khristenko & Kotovska 2017).

White (or silver) bream, *Blicca bjoerkna* (Linnaeus, 1758), is a cyprinid fish species naturally and widely distributed in White, Baltic, North, Atlantic (southward to Adour drainage), Mediterranean (in France), Black, and Caspian Sea basins (Kottelat & Freyhof 2007). It prefers stagnant (warm and shallow lowland lakes and reservoirs) and slow-flowing waters (large rivers and canals). In Serbia, it could be found in large rivers and in the Vojvodina province (Simonović 2001). This species is gregarious and predominantly nocturnal, feeding on benthic invertebrates and plants (Simonović 2001; Kottelat & Freyhof 2007). Females reproduce for the first time at 3 years, while males at 2 years. White bream spawns from May to July in shallow waters (hence, very sensitive to water level changes) densely covered with vegetation, 2-3 times per season. It is an important commercial and sport fishing, despite of the poor quality of its meat. Also, it represents a significant component in the diet of predatory fishes (Okgerman *et al.* 2012).

The aim of the present study is to provide baseline data on LWR and K of the White bream from two locations in the Danube River near Belgrade (Serbia). These locations differ in the speed of the water flow and habitat conditions. Therefore, we assume that the mentioned differences could reflect on LWR and condition of analysed fish.

2. Material and Methods

A total of 377 individuals were obtained from a commercial catch in the Danube River at two sampling sites from December 2014 until February 2015, Veliko ratno ostrvo (VRO) – the main canal of the Danube ($44^{\circ} 50' 1.94''$ N, $20^{\circ} 26' 50.74''$ E), with fast water flow and Jojkića Dunavac (JD) – an armlet of the Danube ($44^{\circ} 50' 4.90''$ N, $20^{\circ} 28' 11.59''$ E), with slow water flow (Figure 1). Samplings were performed using set of gillnets (20-

50 m × 1.4 m, and 4, 4.5, and 5 cm mesh size). Both sampling locations are in the vicinity of the urban part of the city of Belgrade and, also, in the vicinity of agricultural areas.



Figure 1. Map of the sampling sites: 1 – Veliko ratno ostrvo (VRO); 2 – Jojkića Dunavac (JD).

The total body length (L) was measured using an electronic digital caliper (± 0.1 cm precision). The body weight (W) was measured using a digital scale (± 0.1 g precision). The allometric ratio of total length (L) and body weight (W) is determined according to the exponential function (Froese, 2006):

$$W = a \times L^b \quad [1]$$

This equation was converted into its logarithmic expression:

$$\log W = \log a + b \times \log L \quad [2]$$

The parameters a (intercept of the regression curve) and b (regression coefficient) were calculated using the least-square regression, as was the coefficient of determination (r^2). Information on fish growth is provided by the value of b exponent. If $b = 3$, then the growth is isometric, otherwise it is positive allometric ($b > 3$) or negative allometric ($b < 3$). Isometric growth indicates that small and large individuals have the same form and condition. If $b < 3$, then small individuals were in better nutritional condition at the time of sampling or large individuals have changed their shape in order to gain more elongated body. On the other hand, if $b > 3$, then large individuals have increased in width or height more than in length, because large individuals in the sample were usually thicker compared to the small individuals or, rarely, the mentioned differences are the result of a notable ontogenetic change in body shape with size (Froese, 2006).

The Fultons condition factor (K) was estimated as:

$$K = W/L^3 \times 100 \quad [3]$$

This parameter is used to estimate general condition of fish, based on the assumption that heavier individuals of a given length are in better condition.

3. Results and Discussion

No significant differences in total length were recorded between VRO and JD, even though a wider range of variation in length was recorded for VRO (Table 1). The total lengths of the White bream varied from 3.8 to 32.9 cm at Lake Balaton (Specziár *et al.* 1997), 13.2 to 27.8 cm at Lake Ladik, Turkey (Yilmaz *et al.* 2012), 13.4 to 28.2 cm at Aras Dam Lake, Iran (Jamali *et al.* 2015), 6.6 to 24.3 cm at Sapanca Lake, Turkey (Okgerman *et al.* 2012), and 12 to 21.2 cm at six water resources located in Marmara region, Turkey (Tarkan *et al.* 2006). Additionally, Litvinenko *et al.* (2021) found that examined individuals from Kyiv Reservoir (Ukraine) had standard length between 12 and 30 cm.

A wider range of variation in body weight was also recorded for VRO (Table 1). The total weight of White bream varied from 93 to 310 g (only larger, >14–15 cm, included) at Lake Balaton (Specziár *et al.* 1997), 22.8 to 259 g at Lake Ladik, Turkey (Yilmaz *et al.* 2012), 26 to 289 g at Aras Dam Lake, Iran (Jamali *et al.* 2015),

2.8 to 159.4 g at Sapanca Lake, Turkey (Okgerman *et al.* 2012), and 40 to 780 g at Kyiv Reservoir, Ukraine (Litvinenko *et al.* 2021).

Table 1. Number of samples, total length and weight of fish, as well as ranges of these parameters. Values are presented as mean \pm SD.

Locality	N	Total length + SD	Min - Max	Body weight + SD	Min - Max
VRO	288	23.8 \pm 2.4	17.4 - 31.3	201.0 \pm 73.0	50 - 495
JD	89	23.1 \pm 1.7	19.5 - 27.8	164.4 \pm 42.2	105 - 330

In general, fish from VRO were in better condition ($K = 1.44 \pm 0.16$) compared to sample from JD ($K = 1.31 \pm 0.11$). Values of K varied between 0.92 to 1.89 for VRO, and 1.00 to 1.59 for JD. It was found that females of White bream were in better condition ($K = 1.179 \pm 0.012$) compared to the males ($K = 1.121 \pm 0.008$) from Sapanca Lake (Okgerman *et al.* 2012). Litvinenko *et al.* (2021) found K of 2.68 ± 0.12 the pooled samples of both sexes, ranging between 2.04 and 3.66, but K was estimated by the equation: $K = W/SL^2 \times 100$ (where W stood for fish weight and SL for standard length).

Individuals in the sample from VRO had a positive allometric growth – $a = -2.22$, $b = 3.28$, $r^2 = 0.89$ (Figure 2), while those from JD had a negative allometric growth – $a = -1.79$, $b = 2.93$, $r^2 = 0.85$ (Figure 3).

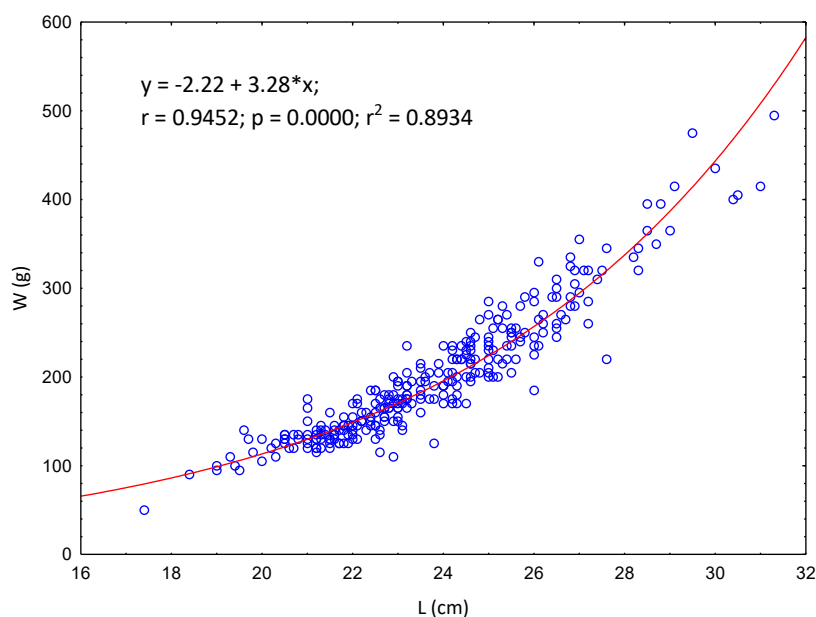


Figure 2. Scatter plot of the LWR relationship in the White bream from Veliko ratno ostrvo (VRO); L – total length; W – weight.

Based on the results of this study, positive allometric growth and fish condition indicated that individuals from location VRO increased body mass more than body length. However, the growth depends on species, sex, age, seasons and feeding (Bagenal & Tesch, 1978). The source of food, its availability, and better habitat conditions at VRO could be the reason for the differences in the growth and condition of the fish from the investigated locations. The growth model was positive allometric for White bream caught at Lake Balaton (Specziár *et al.* 1997), Aras Dam Lake (Jamali *et al.* 2015), Sapanca Lake (Okgerman *et al.* 2012), Lake Ladik (Yilmaz *et al.* 2012), and six water resources located in Marmara region (Tarkan *et al.* 2006). On the other hand, negative allometric growth was recorded for White bream caught at Kyiv Reservoir (Litvinenko *et al.* 2021).

This study may provide insight into population dynamics and general condition of White bream in this part of the Danube River where certain pressure caused by fishing, human activities and habitat destruction is apparent. These findings are important for stock assessment and further monitoring activities. The presented results can be useful for the fisheries management plans and sustainable exploitation measures of the fish resources in the future.

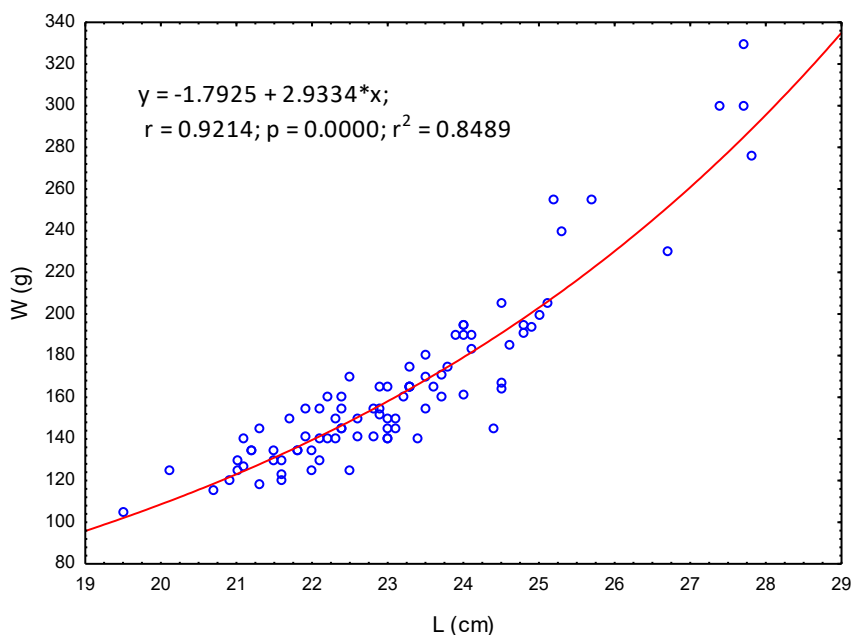


Figure 3. Scatter plot of the LWR relationship in the White bream from Jojkića Dunavac (JD); L – total length; W – weight.

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References

- Bagenal, T.B., Tesch, F.W. (1978). Age and growth. In: Bagenal, T.B. (ed.) Methods for Assessment of Fish Production in Fresh Waters. 3rd Edition. Blackwell Scientific Publications, Oxford, UK.
- Froese, R. (2006). Cube law, condition factor and weight–length relationships: history, meta-analysis and recommendations. *Journal of Applied Ichthyology* 22(4), 241-253.
- Jamali, H., Eagderi, S., Esmacilzadegan, E., Patimar, R. (2015). Age, growth and some biological characteristics of Silver bream (*Blicca bjoerkna* L., 1758)(Cyprinidae) from Aras Dam Lake in Northwest of Iran. *International Journal of Aquatic Biology* 3(1), 35-41.
- Jisr, N., Younes, G., Sukhn, C., El-Dakdouki, M.H. (2018). Length-weight relationships and relative condition factor of fish inhabiting the marine area of the Eastern Mediterranean city, Tripoli-Lebanon. *The Egyptian Journal of Aquatic Research* 44(4), 299-305.
- Khristenko, D.S., Kotovska, G.O. (2017). Length-weight relationship and condition factors of freshwater bream *Abramis brama* (Linnaeus, 1758) from the Kremenchug Reservoir, Middle Dnieper. *Turkish Journal of Fisheries and Aquatic Sciences* 17(1), 71-77.
- Kottelat, M., Freyhof, J. (2007). Handbook of European freshwater fishes. Publications Kottelat, Cornol and Freyhof, Berlin, Germany.
- Litvinenko, V., Kotovska, G., Buzevitch, O., Khrystenko, D. (2021). Length-weight relationship and condition factors of white bream (*Blicca bjoerkna* (Linnaeus, 1758)) from the Kyiv Reservoir. *Aquaculture, Aquarium, Conservation & Legislation* 14(6), 3283-3290.
- Okgerman, H.C., Elp, M., Atasagun, S. (2012). The growth and reproduction of white bream (*Blicca bjoerkna* L. 1758) in an oligo-mesotrophic lake in northwest Anatolia (Sapanca, Turkey). *Turkish Journal of Biology* 36(1), 125-134.
- Simonović, P. (2001). *Ribe Srbije [Fish of Serbia]*. NNK Internacional, Biološki fakultet Univerziteta u Beogradu, Zavod za zaštitu prirode Srbije, Serbia.
- Specziár, A., Tölg, L., Bíró, P. (1997). Feeding strategy and growth of cyprinids in the littoral zone of Lake Balaton. *Journal of Fish Biology* 51(6), 1109-1124.



- Tarkan, A.S., Gaygusuz, Ö., Acıpinar, H., Gürsoy, Ç., Özuluğ, M. (2006). Length–weight relationship of fishes from the Marmara region (NW-Turkey). *Journal of Applied Ichthyology* 22(4), 271-273.
- Yılmaz, S., Yazıcıoğlu, O., Erbaşaran, M., Esen, S., Zengin, M., Polat, N. (2012). Length-weight relationship and relative condition factor of white bream, *Blicca bjoerkna* (L., 1758), from Lake Ladik, Turkey. *Journal of Black Sea/Mediterranean Environment* 18(3), 380-387.